1. **AMENDMENT (LISTING OF THE CLAIMS):**

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A method of nuclear transfer, comprising at least the steps of: (a) selecting and segregating G1 cells from a proliferating or non-proliferating population of donor cells; and (b) transferring a nucleus from such a segregated G1 cell into an enucleated recipient cell, selected from an enucleated oocyte or enucleated stem cell; with the proviso that said method does not result in the production of a primate embryo.

2. (Currently Amended) The method of claim 1, wherein said population of donor cells is at one or more ~~known or unknown~~ stages of the cell cycle.

3. (Previously Presented) The method of claim 1, wherein said population of donor cells is non-proliferating and has been synchronized at a point in the G1 stage of the cell cycle.

4. (Previously Presented) The method of claim 1, wherein said segregated G1 cell is segregated at an early G1 phase.

5. (Previously Presented) The method of claim 1, wherein the donor cell population is non-proliferating and comprises senescent cells.

6. (Previously Presented) The method of claim 1, wherein said population of donor cells is derived from either embryo, fetal, juvenile or adult cells isolated from an animal *in vivo* or from a cell culture *in vitro.*

7. (Previously Presented) The method of claim 6, wherein said population of donor cells comprises a diploid karyotypically-normal cell that can be stimulated to enter the cell cycle and proliferate.

8. (Previously Presented) The method of claim 7, wherein said population of donor cells is of an undifferentiated cellular state, or is at any degree of differentiation, quiescence, or senescence.

9. (Currently Amended) The method of claim 1, wherein ~~the~~said donor cells are selected from the group consisting of adult ~~or fetal~~ fibroblasts, ~~or~~ adult follicular cells, fetal fibroblasts, and fetal follicular cells.

10. (Currently Amended) ~~A method as claimed in~~The method of claim 1, wherein said population of donor cells comprises a modified cells.

11. (Previously Presented) The method of claim 10, wherein said population of donor cells comprises a transgenic cells.

12. (Previously Presented) The method of claim 1, wherein said enucleated recipient cell comprises an enucleated oocyte.

13. (Currently Amended) The method of claim 12, wherein said enucleated oocyte is obtained from ~~a~~the same species ~~corresponding in origin to the~~as said donor nucleus~~nuclei~~.

14. (Previously Presented) The method of claim 1, wherein said enucleated recipient cell comprises an enucleated stem cell or a clump of enucleated stem cells fused together.

15. (Previously Presented) The method of claim 14, wherein said enucleated stem cells or said clump of enucleated stem cells comprise embryonic stem cells isolated from a growing embryo or from an established cell line in culture.

16. (Currently Amended) A method of producing cloned non-primate animal embryos which comprises transferring a segregated donor nucleus in the G1 stage of the cell cycle into an enucleated recipient ~~cell~~oocyte, activating the reconstructed single cell embryo, and culturing said embryo to a suitable stage of development before transferring the embryo to a surrogate female of the same or closely-related species.

17. (Currently Amended) ~~A method as claimed in~~The method of claim 16, wherein said~~the~~ donor nucleus is~~nuclei are~~ genetically altered to produce a cloned embryos having a desirable genetic trait~~s~~.

18. (Canceled)

19. (Currently Amended) ~~A method as claimed in~~The method of claim ~~1~~816, wherein said cloned non-primate animal embryo is a mammal, selected from the group consisting of~~comprising primates including humans,~~ rodents, rabbits, ~~eats~~cats, dogs, horses, cattle,

sheep, deer, goats and pigs.

20.-23. (Canceled)

24. (Currently Amended) A method of cloning a non-~~human~~primate animal comprising the steps: (1) producing a cloned non-~~human~~primate animal embryo according to the method of claim 16; (2) allowing a non-~~human~~primate animal to develop to term from the embryo; and (3) optionally breeding ~~from~~ the non-~~human~~primate animal so formed either by conventional methods or by further cloning.

25. (Currently Amended) ~~A method as claimed in~~The method of claim 24, wherein said cloned ~~non-human~~ animal is a ~~non-human~~ mammal selected from the group consisting of~~comprising non-human primates,~~ rodents, rabbits, cats, dogs, horses, cattle, sheep, goats, pigs, and deer.

26. (Currently Amended) ~~A method as claimed in~~The method of claim 24, wherein said cloned non-~~human~~primate animal is a transgenic non-~~human~~primate animal having a desirable genetic trait.

27. (Currently Amended) ~~A method as claimed in~~The method of claim 26, wherein said transgenic non-~~human~~primate animal is a transgenic bovine or ovine.

28.-33. (Canceled)

34. (Withdrawn) A method of producing an embryonic cell line comprising the steps a) selecting and segregating G1 cells from a proliferating population of donor cells or from a synchronised population of G1 cells or from a population of senescent cells, and transforming a nucleus from such a segregated cell into an enucleated recipient cell; b) growing to blastocyst stage; c) recovering embryonic cells; and d) establishing an immortalised cell line *in vitro*.

35. (Withdrawn) A method as claimed in claim 34, wherein said embryonic cells are embryonic stem cells.

36. (Withdrawn) A method as claimed in claim 34, wherein said donor cells are human cells.

37. (Withdrawn) A method as claimed in claim 34, wherein both donor and recipient cells are human cells.

38. (Withdrawn) A method as claimed in claim 34 wherein the donor cells are adult or fetal cells selected from any karyotypically normal cell type and the recipient cells are selected from any cell type capable of reprogramming gene expression.

39. (Withdrawn) An embryonic cell line produced by the method of claim 34.

40. (Withdrawn) A human embryonic stem cell line produced by the method of claim 35, useful in therapeutic applications.

41. (Withdrawn) A method of producing embryonic stem ceils comprising the steps of a) selecting and segregating G1 cells from a proliferating population of donor cells or from synchronised population of G1 cells or from a population of senescent cells and transferring a nucleus from such a segregated cell into an enucleated recipient cell; b) growing to blastocyst stage; and c) recovering embryonic stem cells.

42. (Withdrawn) A method as claimed in claim 41, wherein said donor cells are human cells.

43. (Withdrawn) A method as claimed in claim 41, wherein both donor and recipient cells are human cells.

44. (Withdrawn) A method as claimed in claim 41, wherein the donor cells are adult or fetal cells selected from any karyotypically normal cell type and the recipient cells are selected from any cell type capable of reprogramming gene expression.

45. (Withdrawn) Embryonic stem cells produced by the method of claim 41.

46. (Withdrawn) Embryonic stem cells as claimed in claim 45, comprising human embryonic stem cells.

47.-48. (Canceled)

49. (Withdrawn) A method of therapeutic cloning, wherein embryonic stem cells are

produced according to claim 35 from a donor cell derived from a subject, and cultured to produce specialised cells or tissue for transplantation in said subject or in another subject in need of such treatment.

50. (Withdrawn) A method as claimed in claim 49, wherein said embryonic stem cells comprise one or more transgenes to confer a desirable genetic trait in the resulting differentiated cells used for transplantation.

51. (Withdrawn) A method of treating a disease, disorder or injury which may be treated by transplantation of specialised cells or tissue, comprising administering to a 1;atient in need thereof a therapeutically effective amount of specialised cells or tissue produced according to the method of claim 49.

52. (Withdrawn) A method as claimed in claim 49, wherein said disease, disorder or injury is selected from various neurological disorders *(e.g.,* Parkinson's disease), diabetes, heart disease, muscular dystrophy, various hereditary diseases, specific cancers *(e.g.,* leukemia), spinal cord injury, bums and other afflictions.

53. (Withdrawn) A method of drug discovery or toxicology testing of drugs using *in vitro*

differentiated human embryonic stem cells produced by the methods of claim 41.

54. (Withdrawn) A method of xenotransplantation, wherein cells, tissues and organs are isolated from the non-human cloned animal of claim 28, and used for transplantation in a human patient in need thereof.

55. (Withdrawn) A method of gene therapy, wherein ceils, tissues and organs comprise a transgene and are isolated for the non-human cloned animal of claim 30.

56. (Currently Amended) The method of claim 1, further comprising the additional step of: (c) growing said enucleated recipient cell that comprises said transferred nucleus to ~~a blastocyst~~ an embryo stage of development, and transferring said embryo to a surrogate female of the same or closely-related species.

57. (Withdrawn) The method of claim 56, further comprising the additional step of: (d) recovering a population of embryonic cells from said blastocyst stage of development.

58. (Withdrawn) The method of claim 57, further comprising the additional step of: (e)

establishing an immortalized cell line from said population of embryonic cells *in vitro*.

59. (Currently Amended) The method of claim 13, wherein said donor nuclei are genetically-altered to produce a cloned non-primate embryo having at least one desirable genetic trait.

60.-61. (Canceled)

62. (Currently Amended) The method of claim ~~6~~13, wherein said enucleated oocyte is obtained from a mammal selected from the group consisting of ~~humans,~~ rodents, rabbits, dogs, cats, horses, cattle, sheep, deer, goats and pigs.

63. (Currently Amended) A method of nuclear transfer, comprising selecting and segregating a population of G1-phase cells from a population of non-proliferating donor cells, and transferring a nucleus from such a segregated G1-phase cell into an enucleated recipient cell, selected from an enucleated oocyte or an enucleated stem cell; with the proviso that said method does not result in the production of a primate embryo.

64. (Currently Amended) A method of nuclear transfer, comprising selecting and segregating a population of early-G1-phase cells from a population of early-G1-phase-synchronized non-proliferating donor cells, and transferring a nucleus from such a segregated early-G1-phase cell into an enucleated recipient cell, selected from an enucleated oocyte or an enucleated stem cell; with the proviso that said method does not result in the production of a primate embryo.

65. (Currently Amended) A method of nuclear transfer, comprising selecting and segregating a population of early-G1-phase cells from a population of early-G1-phase-synchronized non-proliferating embryonic or fetal donor cells, and transferring a nucleus from such a segregated early-G1-phase cell into an enucleated recipient cell, selected from an enucleated oocyte or an enucleated stem cell; with the proviso that said method does not result in the production of a primate embryo.

66. (Currently Amended) A method of nuclear transfer, comprising selecting and segregating a population of early-G1-phase cells from a population of early-G1-phase-synchronized non-proliferating embryonic or fetal donor fibroblast cells, and transferring a nucleus from such a segregated early-G1-phase fibroblast cell into an enucleated recipient stem cell or oocyte; with the proviso that said method does not result in the production of a primate embryo.